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Village and demography in the Brahmaputra valley of Assam, India : Distribution and dynamics from census data

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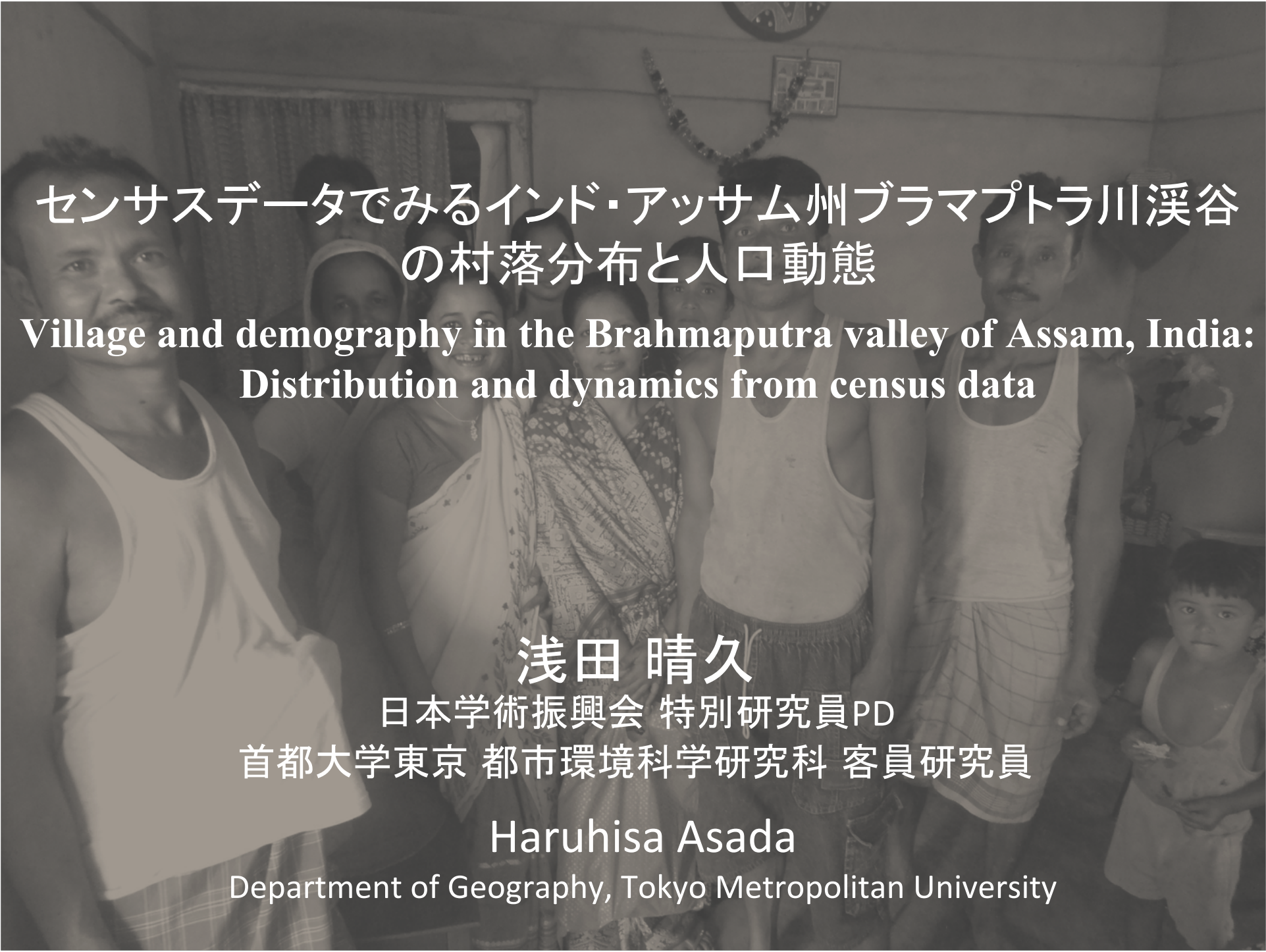
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RIGHT:



センサスデータでみるインド・アッサム州ブラマプトラ川溪谷 の村落分布と人口動態

Village and demography in the Brahmaputra valley of Assam, India:
Distribution and dynamics from census data

浅田 晴久

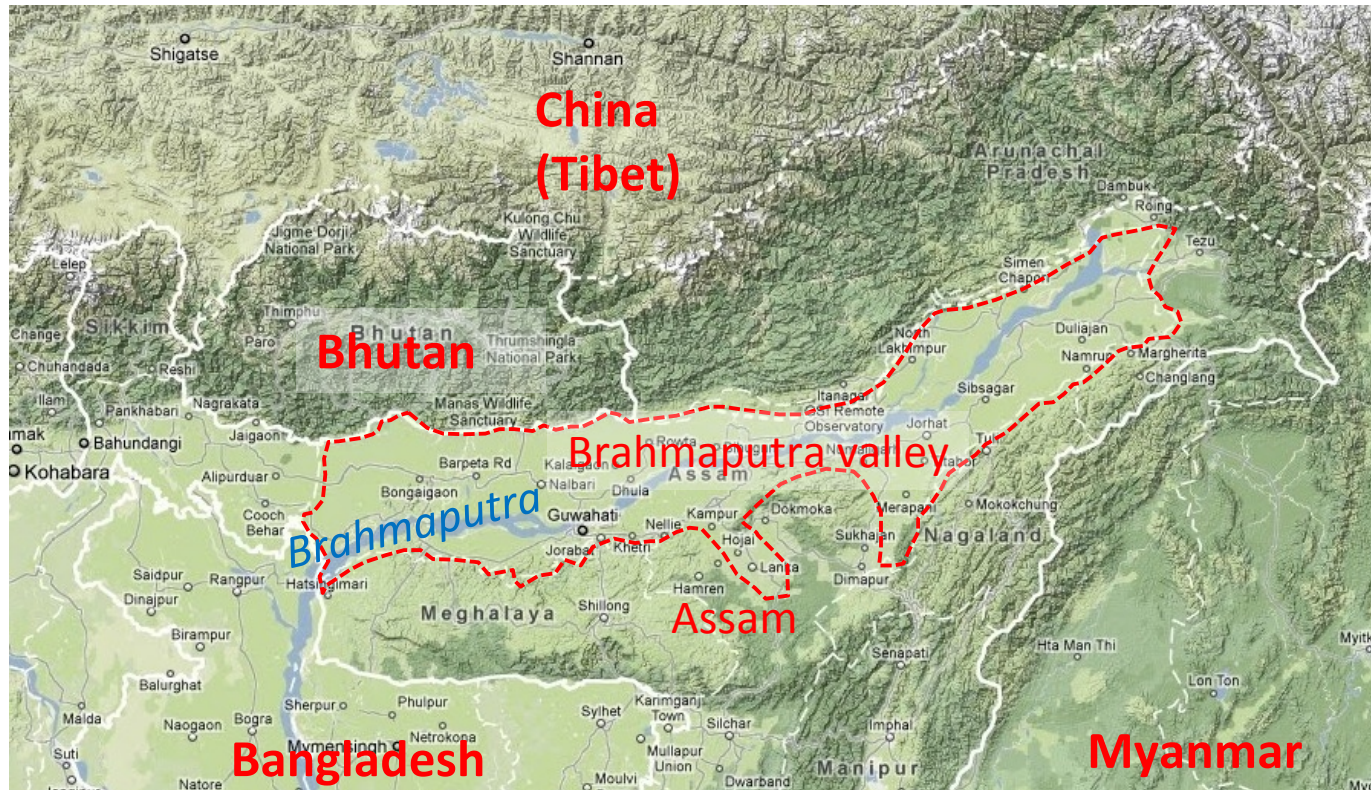
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Introduction



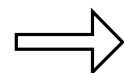
Brahmaputra valley of Assam

Floodplain topography
Multi-ethnic society



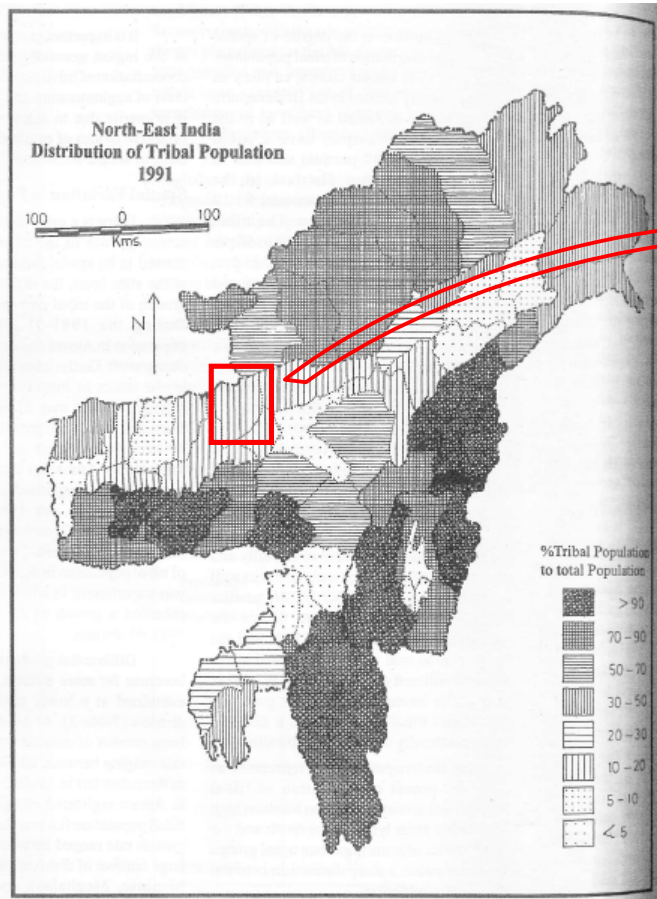
Natural disasters (e.g. Flood, Erosion, Drought)
Ethnic conflicts (e.g. Extremists, Immigrant problem)

Which area, how many people are affected?

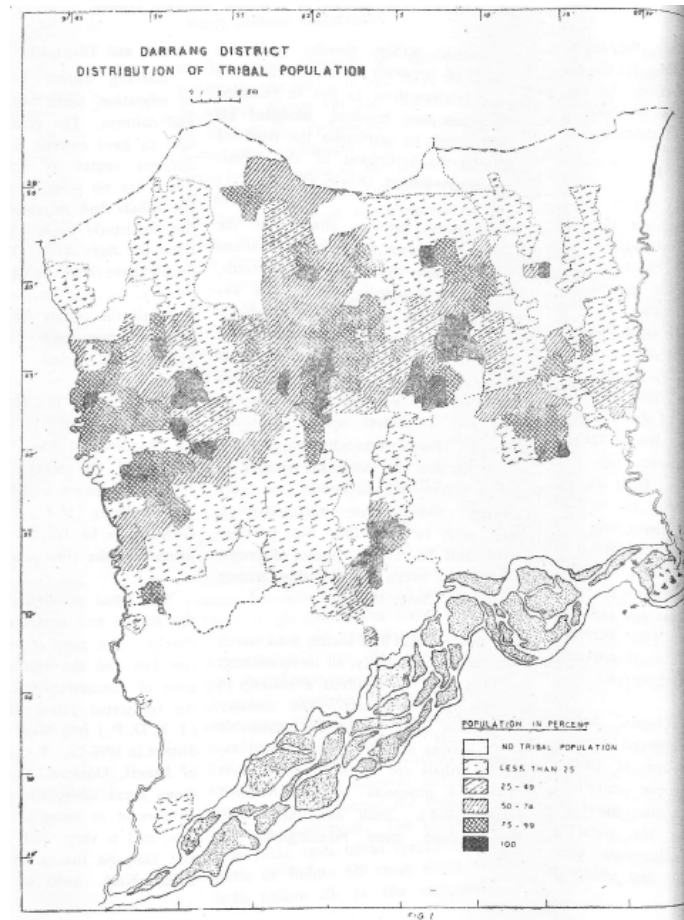


Demographic map should be prepared.

Previous studies



District-wise tribal population
of Northeast India in 1991
(Nayak&Das 1998)



Village-wise tribal population
of Darrang district in 1971
(Goswami 1989)

Studies of population analysis have done only at **Macro & Micro scale**.
The scales do not match with contemporary problems at **Meso scale**.

Objective

This study examines the possibility of **village level census data** for studying the **Meso-scale problems** in the Brahmaputra valley of Assam.

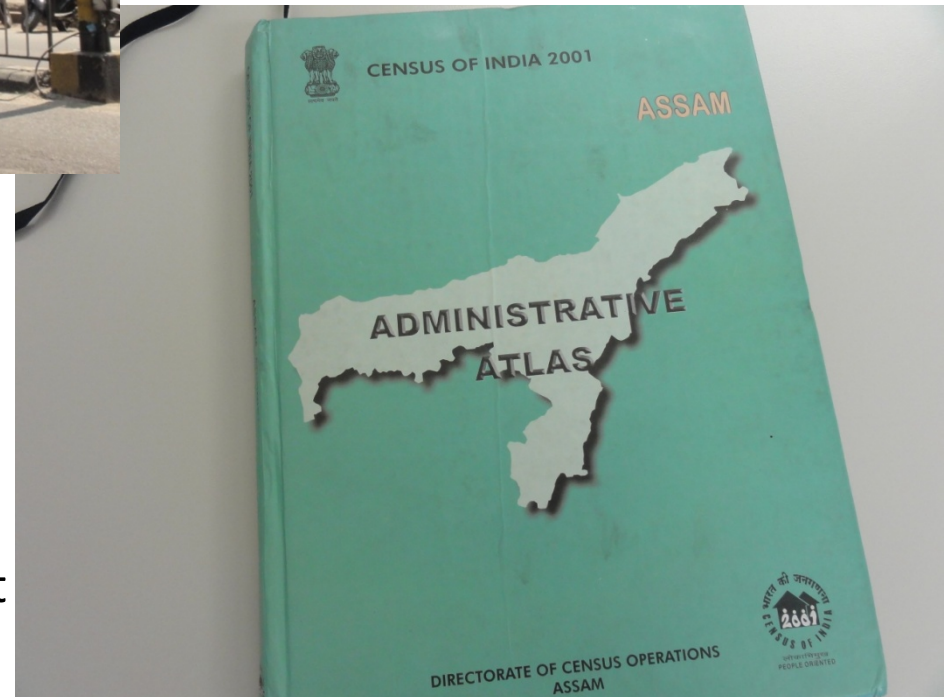
I would like to consider how the **inter-disciplinary research team** can collaborate to solve the regional problems by using map.

Census Data



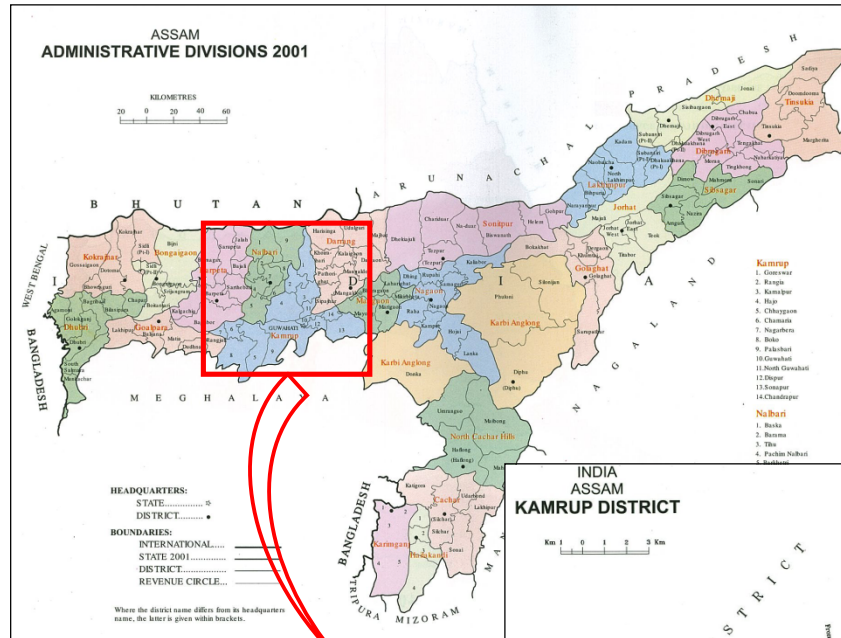
Census Office in Guwahati, Assam

- Administrative Atlas
- Village Directory of each district (CD format)

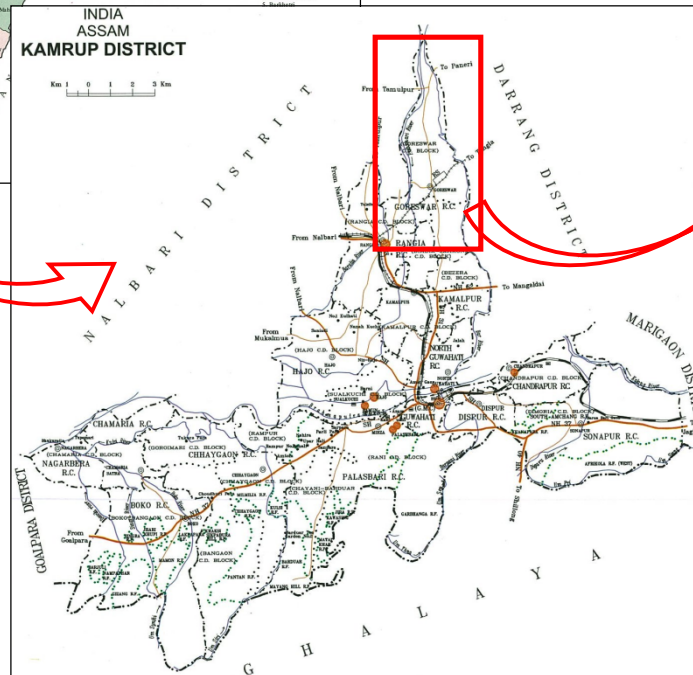


Census Data (1) Map

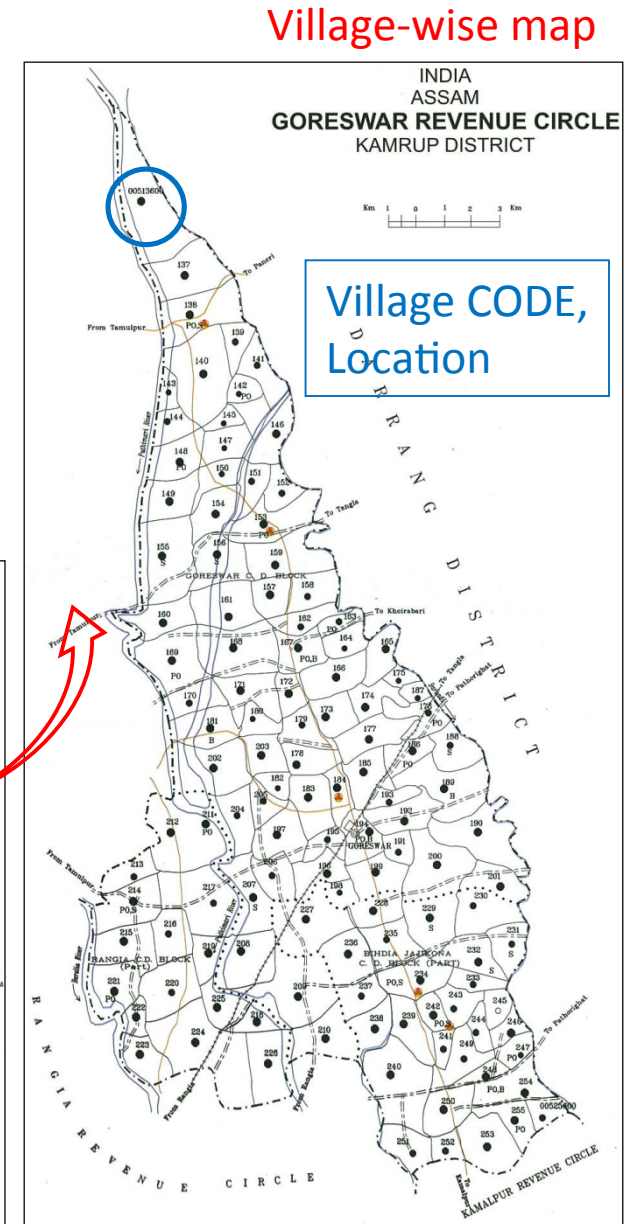
Census Atlas of Assam 2001



District-wise map



Circle-wise map



Census Data (2) Table

Census Atlas of Assam 2001

VILLAGE CODE LIST KAMRUP DISTRICT			
PLCN	Name of Village	PLCN	Name of Village
GORESWAR REVENUE CIRCLE			
0051360	Deochunga	00517000	Niz-Kushula
0051370	Uparkhuti	00517100	Pukhuripar
0051380	Bangali Para	00517200	Simila
0051390	Dabasila	00517300	Makundapur
0051400	Oubari	00517400	Bakulguri
0051410	Bholajhar	00517500	No.3 Roumari
0051420	Bholabatabari	00517600	Kerpavita
0051430	Pepalani	00517700	Niz-Betna
0051440	Barnadi Par	00517800	Bhogpur
0051450	No.3 Suagpur	00517900	Karipara
0051460	Jalthang Par No.3	00518000	Ouguri
0051470	No.4 Suagpur	00518100	Barpathar
0051480	No.2 Suag Pur	00518200	Fahurabari
0051490	No.1 Suagpur	00518300	Ramcha
0051500	No.5 Suagpur	00518400	Sarphutchaki
0051510	No.1 Jalthang Par	00518500	Cheuni
0051520	No.2 Jalthang Par	00518600	Rangmahal
		00518700	Umananda Than
		00518800	Singimari
		00518900	Rampur
		00520700	Harijora
		00520800	Son Mahari
		00520900	Gurmou
		00521000	Bhehbari
		00521100	Khatpara
		00521200	Dongpara
		00521300	Gosaigaon
		00521400	Borghuli
		00521500	Hatimura
		00521600	Madoikata
		00521700	Niz-Kaorbaha
		00521800	Dhulabari
		00521900	Bagribari
		00522000	Dhepar Gaon
		00522100	Lahapara
		00522200	Senimara
		00522300	Bihapara
		00522400	Khundikar
		00522500	Deulkuchi
		00522600	Dhokuchi
		00522700	Balahati
		00524400	Mahipal Kuchi
		00524500	Barigaon
		00524600	Sonari Sal
		00524700	Balikuchi
		00524800	Loch
		00524900	Bangal Gaon
		00525000	Muktapur
		00525100	Makundapur
		00525200	Belkona
		00525300	Bargaon
		00525400	Tulamali
		00525500	Saledal
		00525600	Saulmari
		RANGIA REVENUE CIRCLE	
		00525700	Pathalikuchi
		00525800	Kekerikuchi
		00525900	Dwarkuchi
		00526000	Khepnikuchi
		00526100	Jaljali

Village CODE Village Name

Village Directory (2001) from Census Office, Guwahati

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ST_CODE	DIST_CODE	THSIL_CODE	BLOCK_CODE	V_CODE	VILL_NAME	AREA	T_HH	T_P	T_M	T_F	SC_P	SC_M	SC_F	ST_P	ST_M	ST_F
18	06	0001	0001	00513600	Deochunga	870	651	3658	1871	1787	4	2	2	555	273	282
18	06	0001	0001	00513700	Uparkhuti	509	447	2717	1368	1349	23	14	9	91	50	41
18	06	0001	0001	00513800	Bangali Para	491	598	3167	1633	1534	119	59	60	27	12	15
18	06	0001	0001	00513900	Dabasila	130	96	567	302	265	0	0	0	168	83	85
18	06	0001	0001	00514000	Oubari	490	505	2769	1421	1348	78	39	39	448	215	233
18	06	0001	0001	00514100	Bholajhar	319	179	971	474	497	0	0	0	519	254	265
18	06	0001	0001	00514200	Bholabatabari	232	77	449	235	214	0	0	0	378	195	183
18	06	0001	0001	00514300	Pepalani	163	81	454	221	233	194	92	102	5	3	2
18	06	0001	0001	00514400	Barnadi Par	185	198	976	478	498	190	90	100	379	178	201
18	06	0001	0001	00514500	No.3 Suagpur	96	68	412	213	199	0	0	0	183	92	91
18	06	0001	0001	00514600	Jalthang Par No.3	253	204	1132	593	539	0	0	0	762	394	368
18	06	0001	0001	00514700	No.4 Suagpur	227	82	454	237	217	0	0	0	192	100	92
18	06	0001	0001	00514800	No.2 Suag Pur	285	204	1195	637	558	0	0	0	584	322	262
18	06	0001	0001	00514900	No.1 Suagpur	303	252	1330	684	646	88	47	41	72	39	33
18	06	0001	0001	00515000	No.5 Suagpur	154	50	289	153	136	0	0	0	244	128	116
18	06	0001	0001	00515100	No.1 Jalthang Par	216	113	584	292	292	0	0	0	554	279	275
18	06	0001	0001	00515200	No.2 Jalthang Par	148	135	730	388	342	0	0	0	458	245	213
18	06	0001	0001	00515300	Sub-Naokata	470	485	2747	1381	1366	19	9	10	1529	764	765
18	06	0001	0001	00515400	aban Par	259	226	1288	690	598	0	0	0	706	379	327
18	06	0001	0001	00515500	etagaon	763	598	3190	1615	1575	349	178	171	1105	563	542
18	06	0001	0001	00515600	Niz-Jargaon	379	245	1364	724	640	0	0	0	309	162	147
18	06	0001	0001	00515700	Kalbari	191	265	1260	621	639	0	0	0	0	0	0
18	06	0001	0001	00515800	agurmari	172	97	598	301	297	0	0	0	504	251	253
18	06	0001	0001	00515900	achim Naokata	369	390	2073	1040	1033	66	35	31	704	354	350
18	06	0001	0001	00516000	arigaon	310	240	1270	662	608	106	53	53	495	250	245
18	06	0001	0001	00516100	Path Kuchi	252	226	1204	720	665	0	0	0	662	446	447

Village CODE

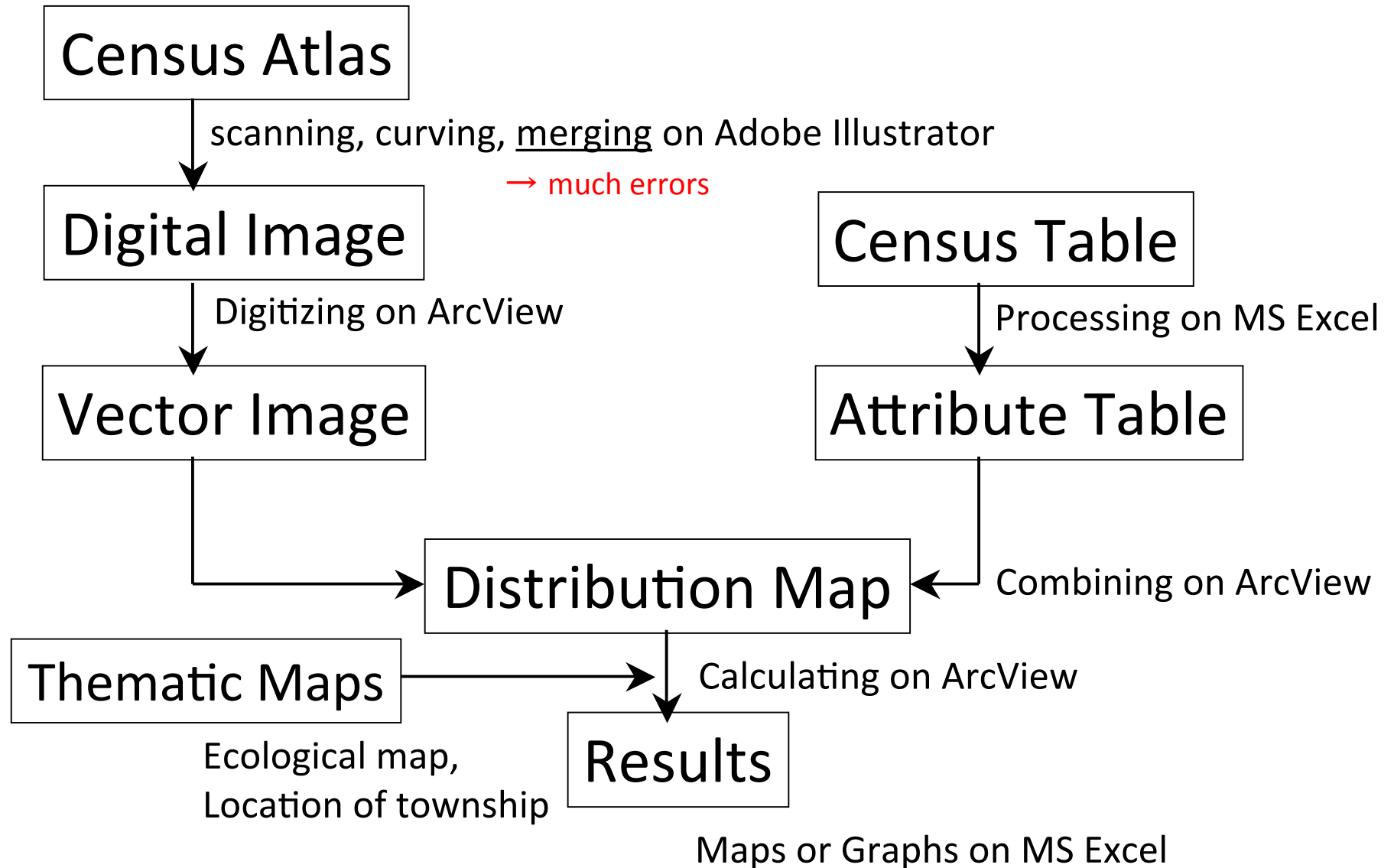
Village Name

Area (ha)
Households
Population (Total, SC, ST)
Income, Expenditure
Commodity
Facility (School, Well etc.)
Land Use (Forest, Waste, Irrigated etc.)

Scheduled Caste (SC) : People of historically disadvantaged class.
Scheduled Tribe (ST) : Ethnic minority with unique culture & language.

In this study, people other than SC and ST is defined as General (GEN).

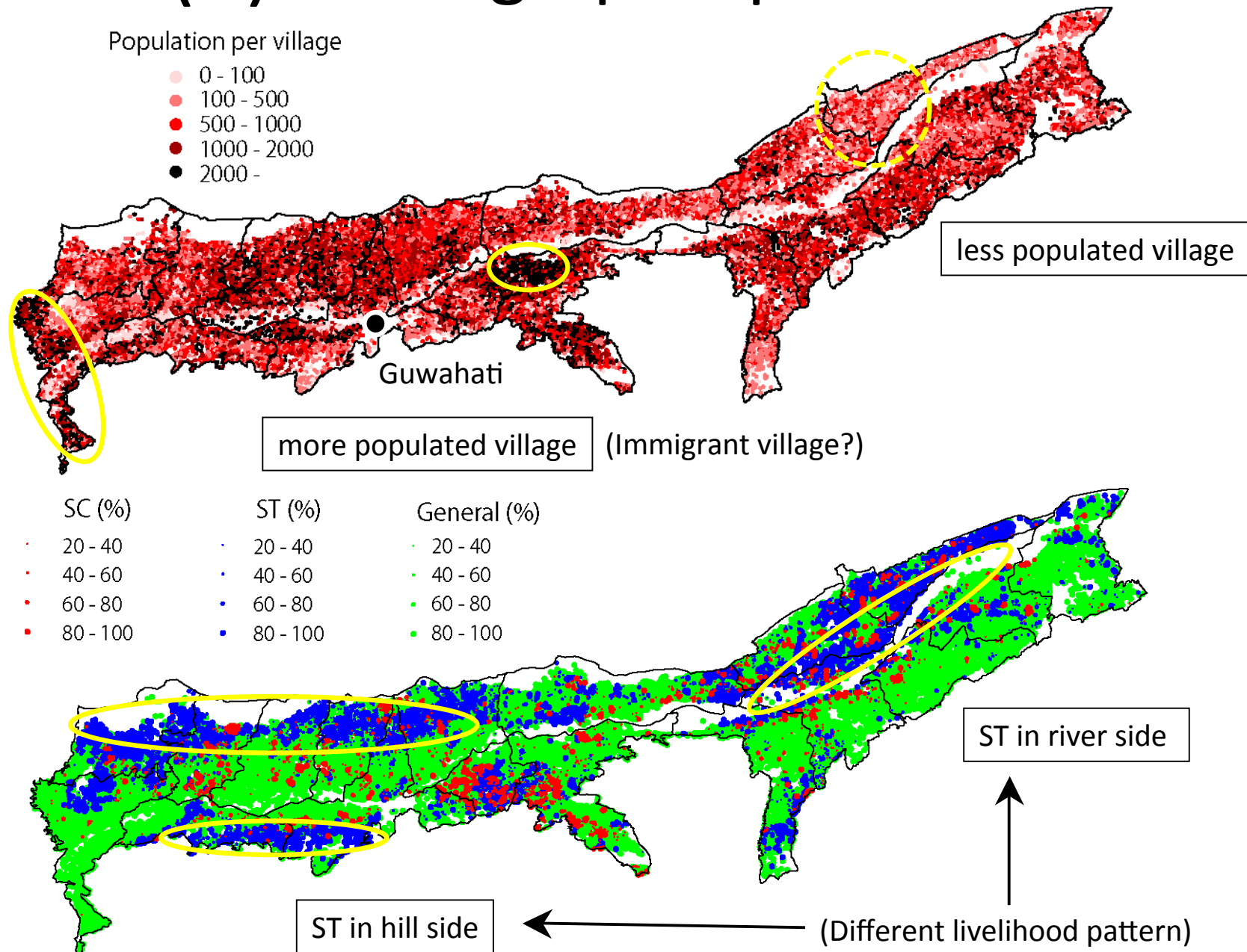
Flow of Data Process



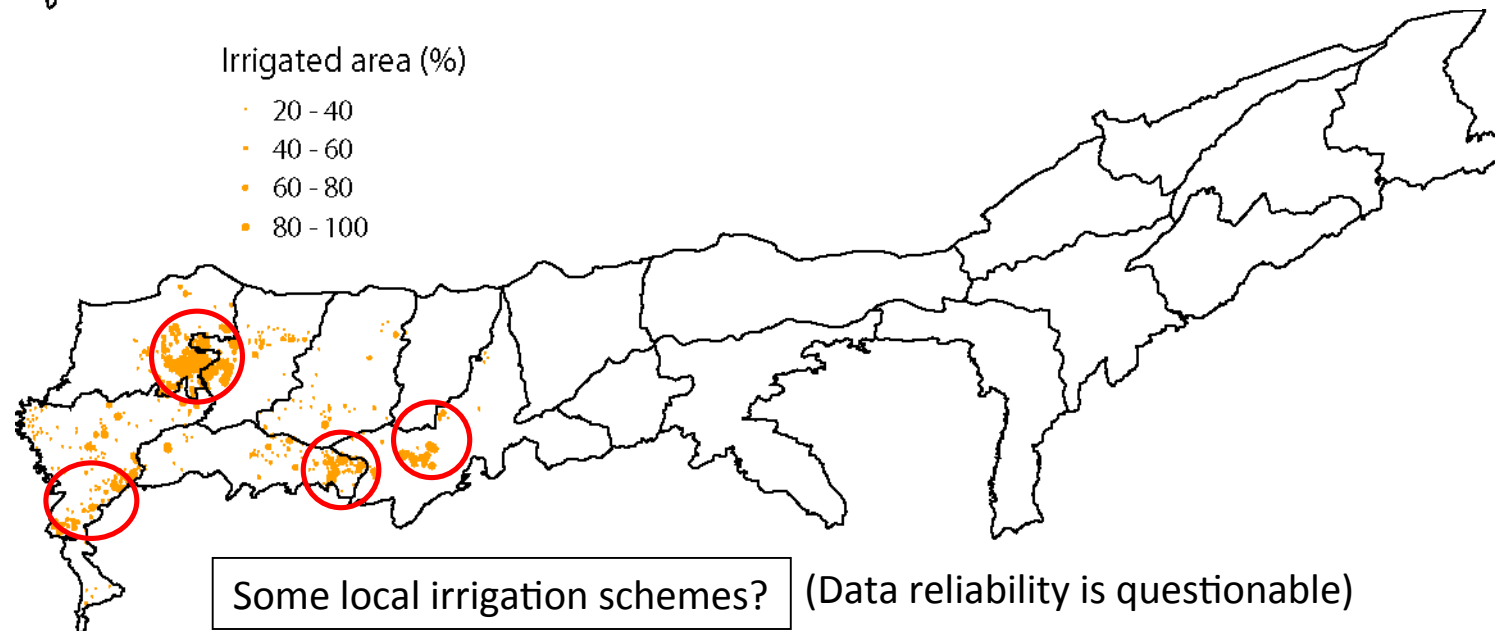
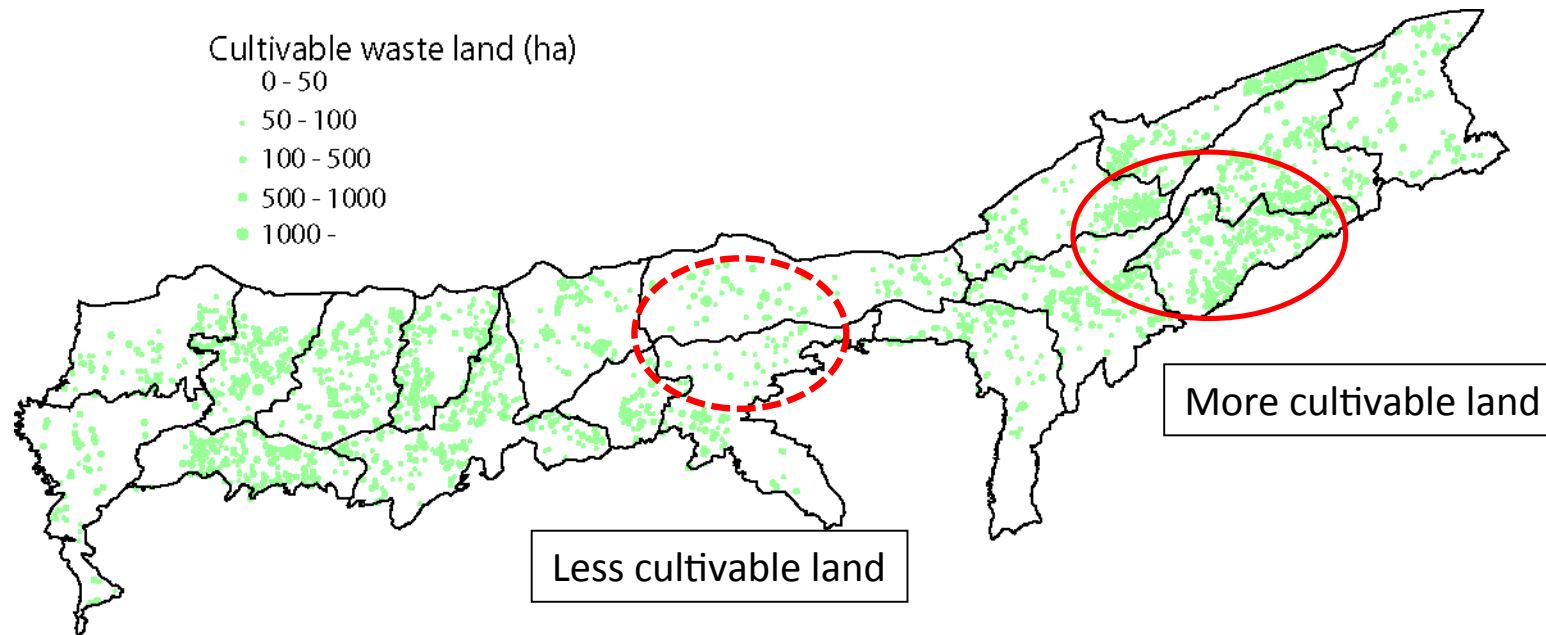
Results (1) – (7)



Result (1) Demographic pattern in 2001

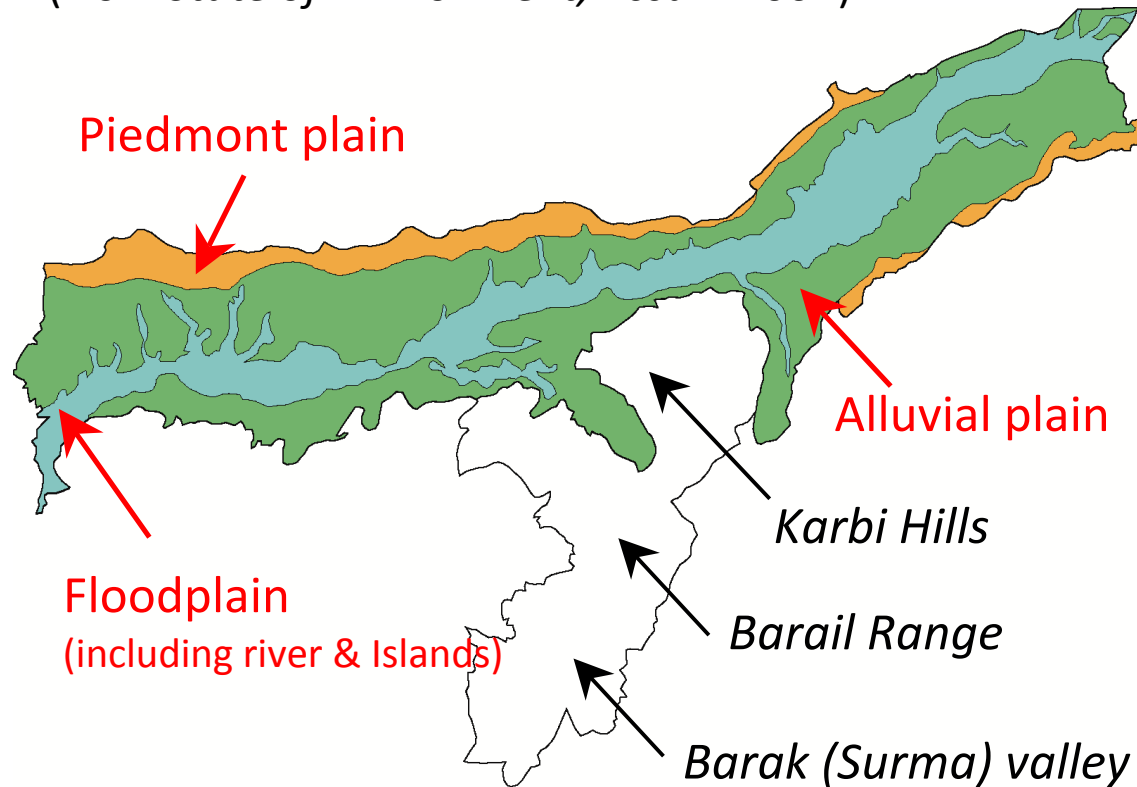


Result (2) Agricultural Land Use in 2001



Result (3) Relation with ecological zones

Ecological Zones of the Brahmaputra valley
(from *State of Environment, Assam 2004*)

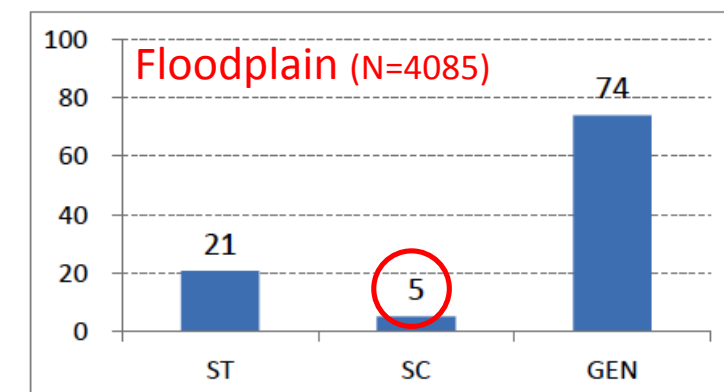
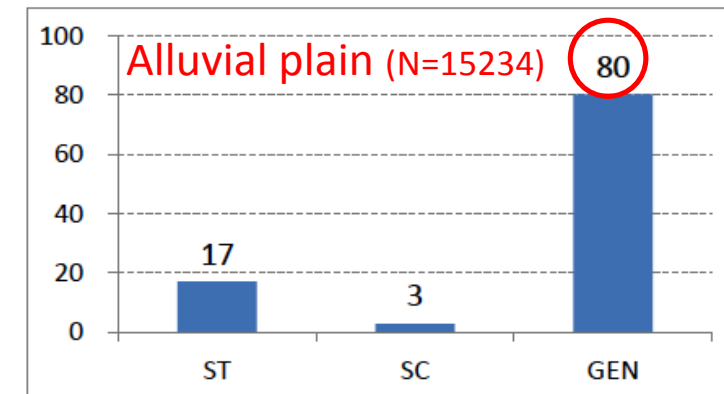
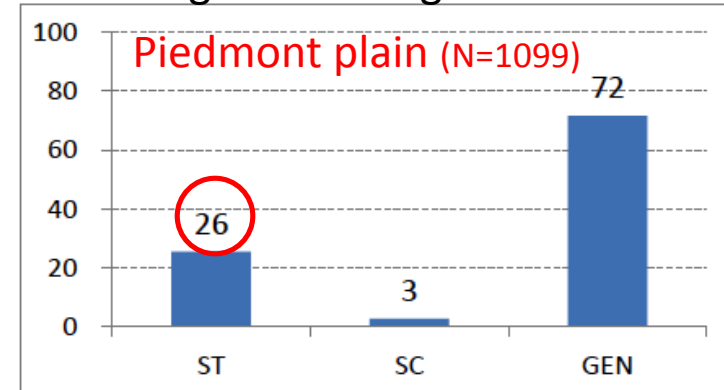


Proportion of ST people in piedmont plain is more.

In the Brahmaputra valley as a whole, difference of inhabitant pattern is small.

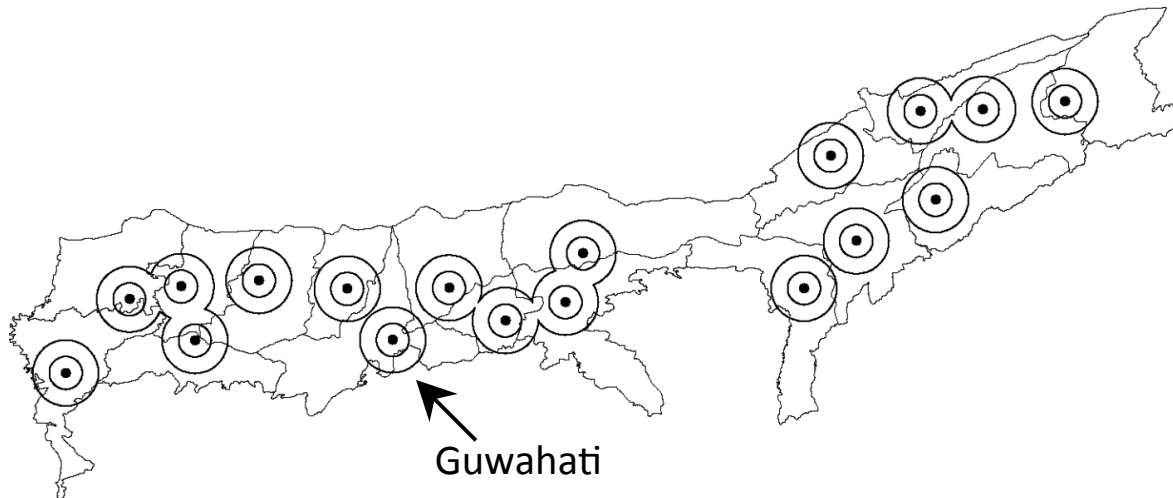
→ There may be some errors.

Village Percentage in each zones



Result (4) Distance from township

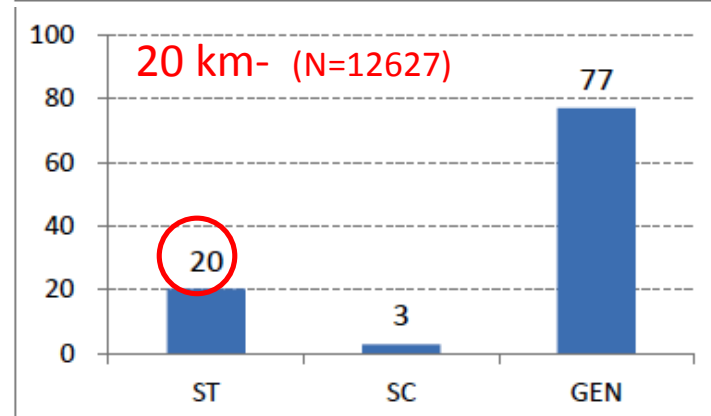
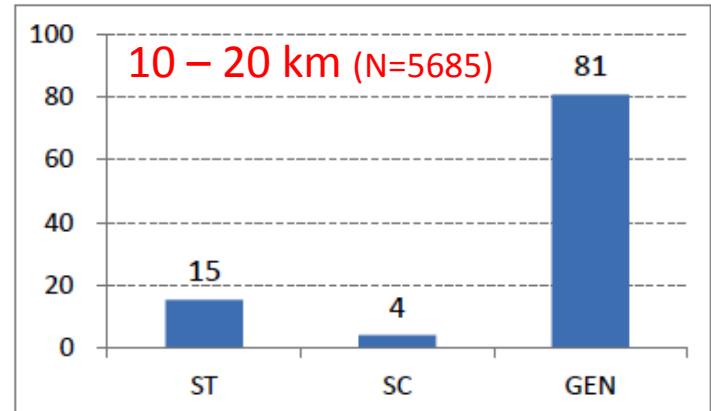
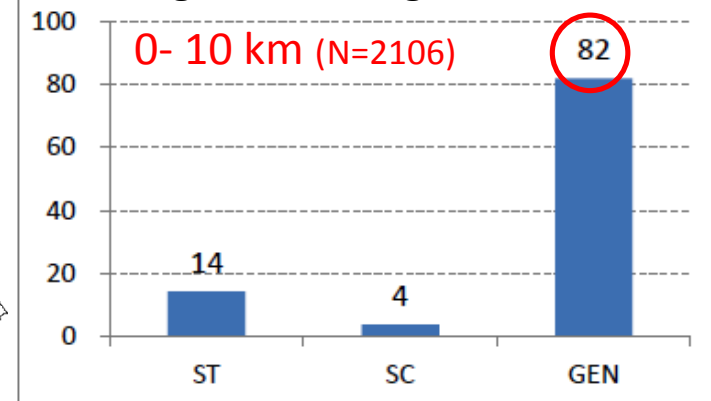
10, 20 km buffer zone from 18 district headquarters



ST people lives in more distant place from town.
In the Brahmaputra valley as a whole, difference
of inhabitant pattern is small.

→ There may be some errors.

Village Percentage in each zones



Comparison of different decades of Census

Village Directory, Census 1991

	A	B	C	D	E	F	G
1	CODE, C, 18	NAME, C, 30	AREA, N, 8, 2	RES_HOUSE	HOUSEHOLD	T_POPLN, N, T_M_POPLN	
2	070010008000800001	Pathalikuchi	226.97	101	101	640	333
3	070010008000800002	Kekerikuchi	402.84	221	221	1642	911
4	070010008000800003	Dwarkuchi	463.9	526	526	3663	2012
5	070010008000800004	Khupouikuchi	130.75	141	141	899	477
6	070010008000800005	Jalali	253.12	166	166	1022	545
7	070010008000800006	Khudra Garikona	138.42	49	49	329	167
8	070010008000800007	Sekonibari	376.66	365	365	2092	1098
9	070010008000800008	Tulsibari	801.31	750	750	4271	2307
10	070010008000800009	Ichapur	296.77	197	197	1402	705
11	070010008000800010	Halikuchi	289.14	131	131	894	485
12	070010008000800011	Bichennala	382.38	319	319	2091	1124
13	070010008000800012	Tarani	455.4	394	394	2319	1245
14	070010008000800013	Hairandhab	308	120	120	697	366
15	070010008000800014	Kathra	104.96	57	57	415	217
16	070010008000800015	Batakuchi	95.96	131	131	759	405
17	070010008000800016	Jamtala	151.8	205	205	1241	642
18	070010008000800017	Karargarbitor	369.76	248	248	1495	765
19	070010008000800018	Doloigaon	66.24	44	44	277	147
20	070010008000800019	Balagaon	62.68	83	83	507	267
21	070010008000800020	Tatarkuchi	105.44	122	122	783	406
22	070010008000800021	Pub-Sitara	118.34	59	59	392	201
23	070010008000800022	Poshim Sitara	154.91	118	118	831	449
24	070010008000800023	Teleranakuchi	48.28	7	7	59	29
25	070010008000800024	Goriakath	174	195	195	1325	690
26	070010008000800025	Alagdia	98.88	27	27	209	103
27	070010008000800026	Kakohati	210.12	105	105	749	393
28	070010008000800027	Bhatkuchi	161.94	19	19	112	48
29	070010008000800028	Udiana	319.9	538	538	3504	1844
30	070010008000800029	Gurkuchi	95.06	119	119	745	372

CODE Village Name Area & Households

Village Directory, Census 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	ST_CODE	DIST_CODE	THSL_CODE	BLOCK_CODE	V_CT_CODE	VILL_NAME	AREA	T_HH	T_P	T_M	T_F	SC_P	SC_M	SC_F	ST_P	ST_M	ST_F
2	18	06	0001	0001	00513600	Deochunga	870	651	3658	1871	1787	4	2	2	555	273	282
3	18	06	0001	0001	00513700	Iparkhuti	509	447	2717	1368	1349	23	14	9	91	50	41
4	18	06	0001	0001	00513800	Bangali Para	491	598	3167	1633	1534	119	59	60	27	12	15
5	18	06	0001	0001	00513900	Dabasila	130	96	567	302	265	0	0	0	168	83	85
6	18	06	0001	0001	00514000	Dubari	490	505	2769	1421	1348	78	39	39	448	215	233
7	18	06	0001	0001	00514100	Sholajhar	319	179	971	474	497	0	0	0	519	254	265
8	18	06	0001	0001	00514200	Sholabatabari	232	77	449	235	214	0	0	0	378	195	183
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13	18	06	0001	0001	00514700	Jo.4 Suagpur	227	82	454	237	217	0	0	0	192	100	92
14	18	06	0001	0001	00514800	Jo.2 Suag Pur	285	204	1195	637	558	0	0	0	584	322	262
15	18	06	0001	0001	00514900	Jo.1 Suagpur	303	252	1330	684	646	88	47	41	72	39	33
16	18	06	0001	0001	00515000	Jo.5 Suagpur	154	50	289	153	136	0	0	0	244	128	116
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18	18	06	0001	0001	00515200	Pub-Naokata	148	135	730	388	342	0	0	0	458	245	213
19	18	06	0001	0001	00515300	aban Par	470	485	2747	1381	1366	19	9	10	1529	764	765
20	18	06	0001	0001	00515400	betagaon	259	226	1288	690	598	0	0	0	706	379	327
21	18	06	0001	0001	00515500	iz-Jargaon	763	598	3190	1615	1575	349	178	171	1105	563	542
22	18	06	0001	0001	00515600	Kalbari	379	245	1364	724	640	0	0	0	309	162	147
23	18	06	0001	0001	00515700	agurmari	191	265	1260	621	639	0	0	0	0	0	0
24	18	06	0001	0001	00515800	achim Naokata	172	97	598	301	297	0	0	0	504	251	253
25	18	06	0001	0001	00515900	arigaon	369	390	2073	1040	1033	66	35	31	704	354	350
26	18	06	0001	0001	00516000		310	240	1270	662	608	106	53	53	495	250	245

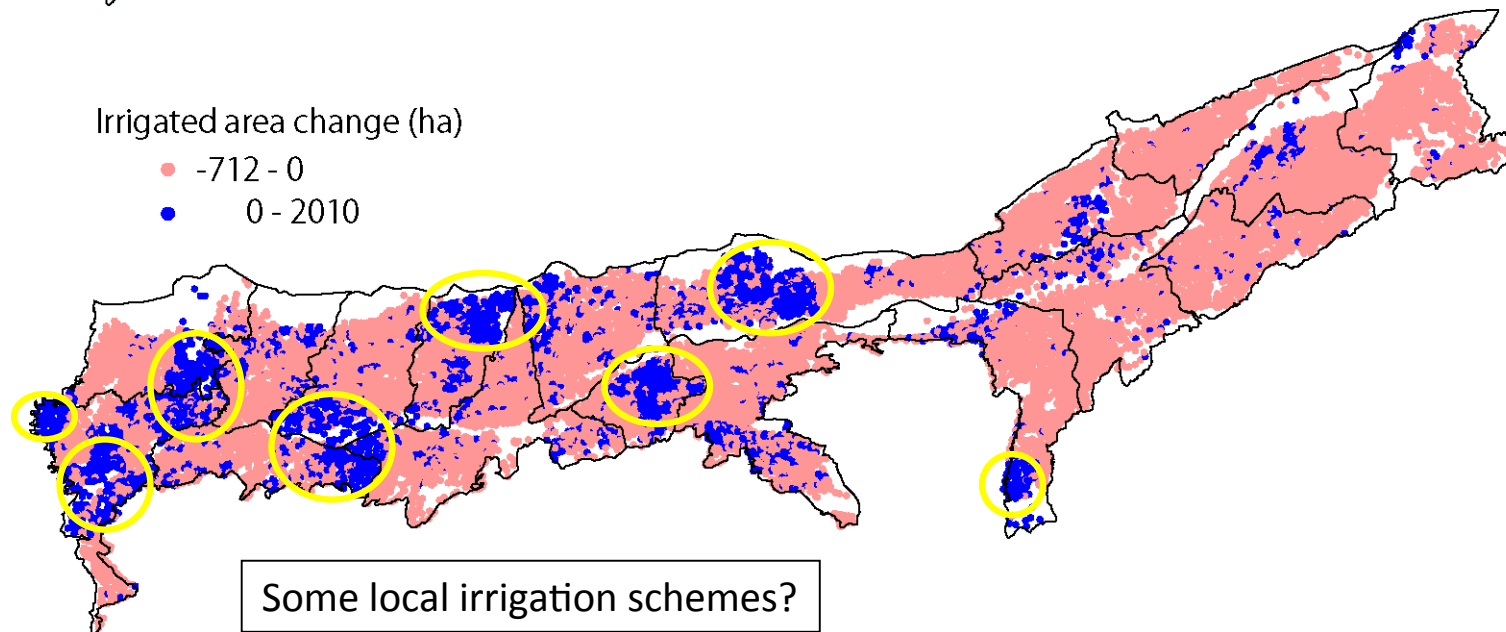
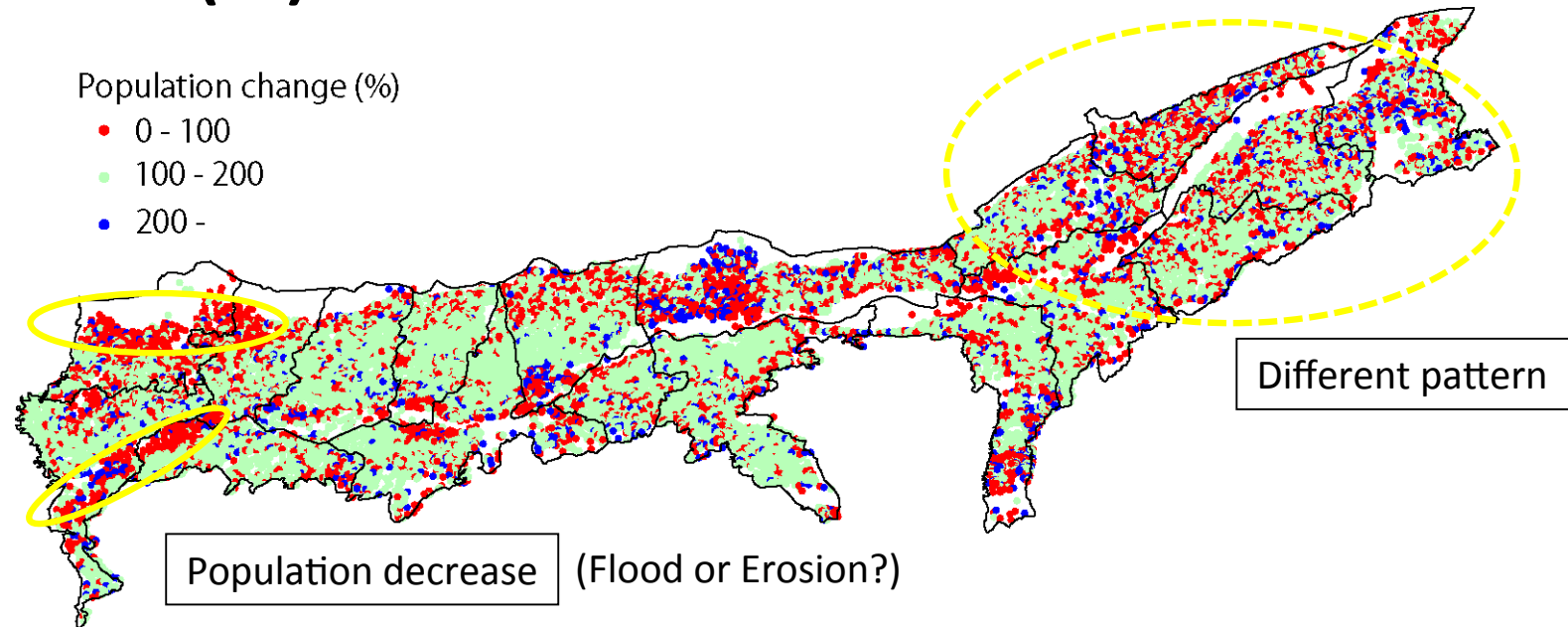
CODE Village Name Area & Households

Village CODE does not match in different census series.

By using **village name**, **Area** and **Households**, we must identify all villages.

18054 villages are identified among 20330 villages (89%) between two census.

Result (5) Difference of 2001-1991



Adding information by hearing survey

Census data only provide the information of **ST / SC population**, but Hearing survey from local people can provide the information about which **community or ethnic groups** live in each village.

Residential information of **869 villages** are identified among **1170 villages**

(74 %) in Lakhimpur district (my study area).

Community in Lakhimpur district

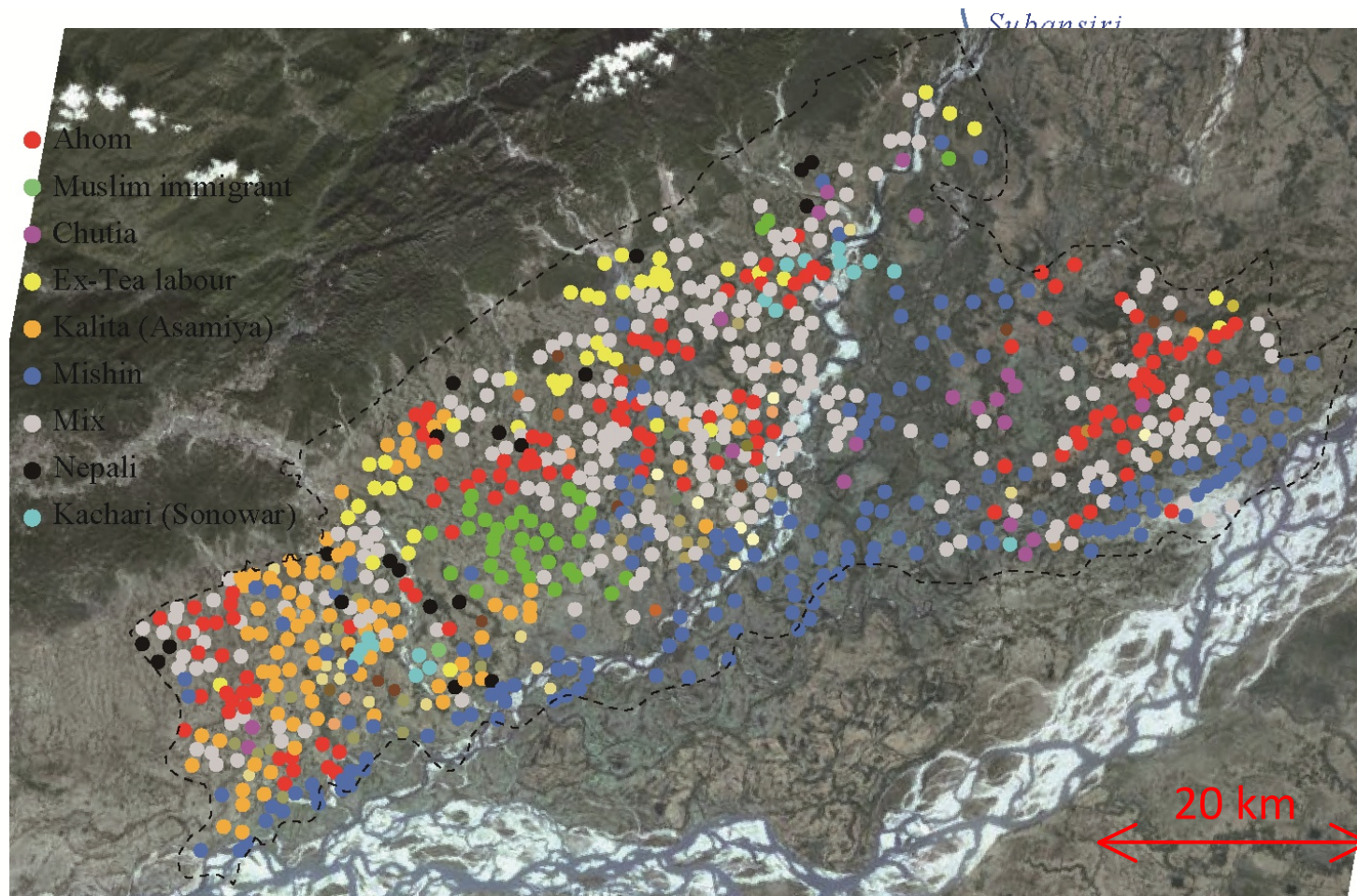
ST : *Mishin, Kachari, Deuri, Khamti*

SC : *Dum, Hari, Bania*

General & OBC : *Kalita (Asamiya), Ahom, Bengali, Nepali, Chutia*



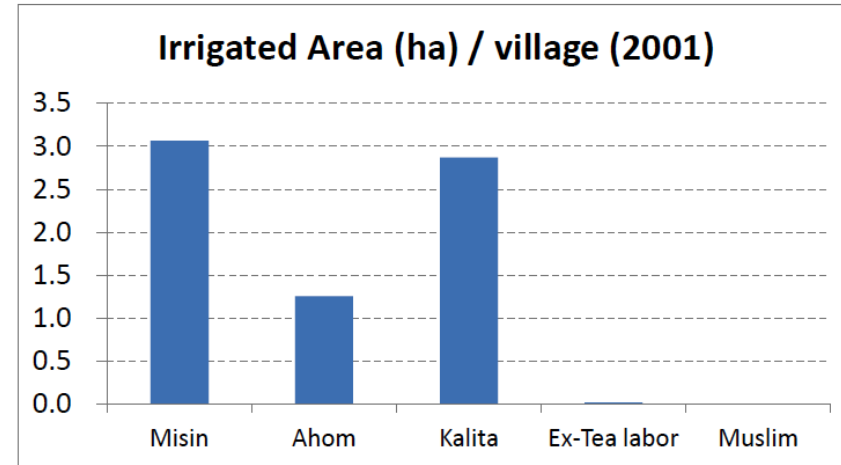
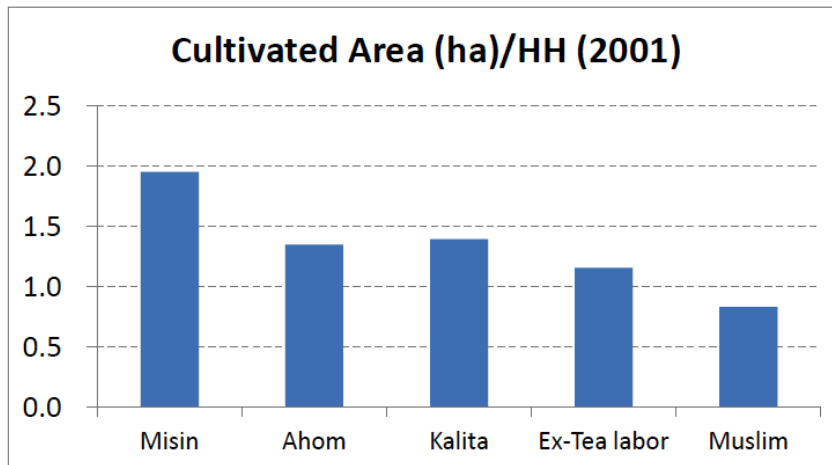
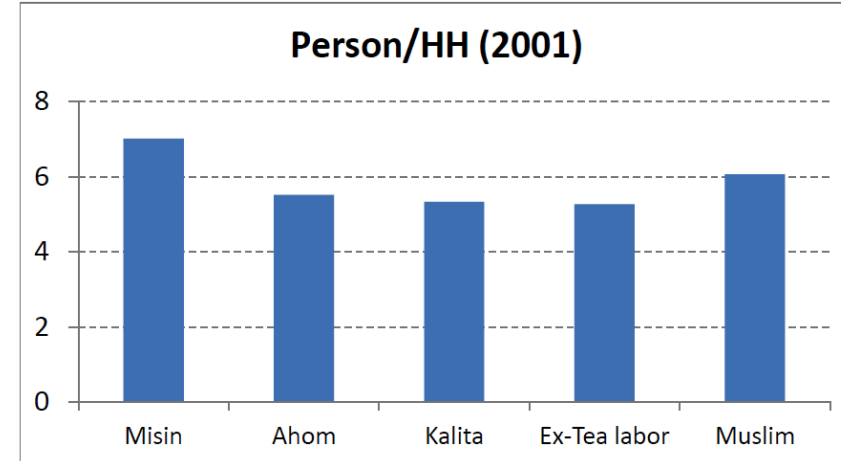
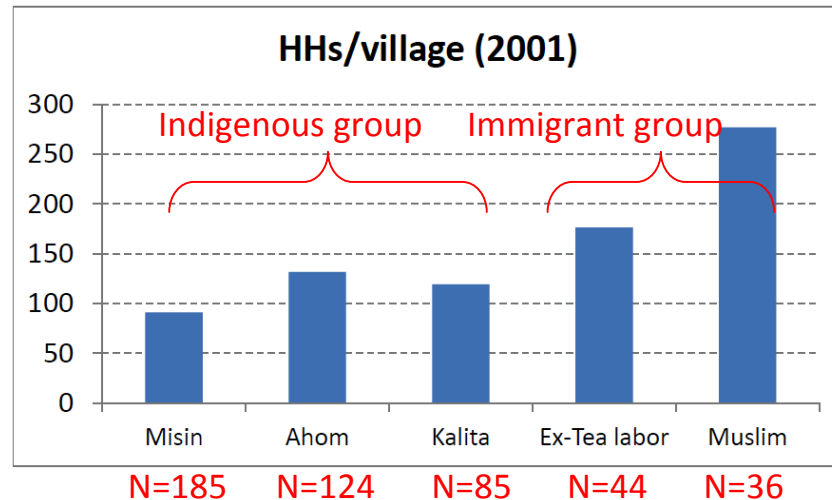
Result (6) Demographic pattern of Lakhimpur district



Some kinds of pattern are according to ecological (hill side or river side) and social environment (near town or along highways).

Community group with small population (SC) is difficult to identify.

Result (7) Comparison of different ethnic groups



Some differences are seen in both **demographic pattern** and **agricultural land use** between **indigenous group** and **immigrant group**.

Discussion & Conclusion



Discussion

Possibility of using village-level Census

1. Collaboration with other research field

Flood affected area map, Epidemic map, Land use map
etc.

2. Additional data from field survey

Combining field work with GIS analysis enables deeper studies.

Some problems on using census data

3. Geometric error of census maps.

Less accuracy in GIS calculation with other thematic maps.

4. Quality of census data

Available data type varies by each census.

Digital data is not available before census 1991.

Conclusion

1. Village level census data can provide a **new regional image** which can go beyond the existing district boundary and match with **Meso-scale phenomena**.
2. By combining with different census data set, other thematic maps and field work data, **inter-disciplinary study** will be possible.
3. **Some errors on census data** should be corrected for accurate GIS calculation.